Claims

1. A protein having a fructosylamine oxidase activity of the following (a) or (b):

(a) a protein comprising the amino acid sequence as set forth in SEQ ID NO: 1 of the Sequence Listing;

(b) a protein comprising an amino acid sequence where one or several amino acid residue(s) is/are deleted, substituted or added in the amino acid sequence of (a) and having a fructosylamine oxidase activity.

2. A fructosylamine oxidase containing the sequence GlyPhePhePheGluAlaAspGluAsnAsnGluIleLys.

3. A fructosylamine oxidase having any of the sequences of the following (e) to (h):

(e) PheHisTyrAspTyrValAlaProLeuAlaLysProAsnSerLysGluArg;

(f) AspAlaProLeuLeuHisAspLysGluTyrTyrGluGluLeuGlnLysAsnGlyLeuArgAsnTyrArgTyrIleSerThr;

(g) ThrLysGlyAspLysGlyLeuAspProGluAspLys; and

(h) TrpValSerValGluAsnProThrProHisLysLeuGlu.

4. The fructosylamine oxidase according to any one of claims 1 to 3, which is derived from *Pichia* sp. N1-1 strain or from genus *Pichia*.

5. A gene coding for a fructosylamine oxidase which is a protein of the following (a) or (b):

(a) a protein comprising the amino acid sequence as set forth in SEQ ID NO: 1 of the Sequence Listing;

(b) a protein comprising an amino acid sequence where one or several amino acid residue(s) is/are deleted, substituted or added in the amino acid sequence of (a) and having a fructosylamine oxidase activity.

6. A gene coding for a fructosylamine oxidase which is any one of the following (c) or (d):

(c) DNA comprising the nucleotide sequence as set forth in SEQ ID NO: 2 of the Sequence Listing;

(d) DNA where one or several nucleotide(s) is/are deleted, substituted or added in the above sequence (c) and codes for a protein having a fructosylamine oxidase activity.

7. A recombinant vector containing the gene as claimed in claim 5 or 6.

8. A transformant or a transfectant transformed with the recombinant vector as claimed in claim 7.

9. A process for the production of a fructosylamine oxidase comprising culturing the transformant as claimed in claim 8, and collecting the fructosylamine oxidase from the culture.

10. A fructosylamine oxidase produced by the process as claimed in claim 9.

11. A spectroscopic analysis method for a fructosylamine compound using the fructosylamine oxidase as claimed in any one of claims 1 to 4 or 10.

12. An electrochemical analysis method for a fructosylamine compound using the fructosylamine oxidase as claimed in any one of claims 1 to 4 or 10.

13. An electrochemical analysis method for fructosyl valine using the fructosylamine oxidase as claimed in any one of claims 1 to 4 or 10.

14. A method for the assay of HbA1c comprising digesting HbA1c in a sample to generate fructosyl valine, and analyzing the fructosyl valine spectroscopically using the fructosylamine oxidase as claimed in any one of claims 1 to 4 or 10.

15. A method for the assay of fructosamine comprising digesting fructosamine in a sample to generate a fructosylamine compound, and analyzing the fructosylamine compound spectroscopically using the fructosylamine oxidase as claimed in any one of claims 1 to 4 or 10.

16. A method for the assay of glycated albumin comprising digesting glycated albumin in a sample to generate a fructosylamine compound, and analyzing the fructosylamine compound spectroscopically using the fructosylamine oxidase as claimed in any one of claims 1 to 4 or 10.

17. An electrochemical analysis method for HbA1c using the fructosylamine oxidase as claimed in any one of claims 1 to 4 or 10.

18. An electrochemical analysis method for fructosamine

using the fructosylamine oxidase as claimed in any one of claims 1 to 4 or 10.

19. An electrochemical analysis method for glycated albumin using the fructosylamine oxidase as claimed in any one of claims 1 to 4 or 10.

20. A kit for assay of fructosyl valine comprising the fructosylamine oxidase as claimed in any one of claims 1 to 4 or 10.

21. A kit for assay of HbA1c containing the fructosylamine oxidase as claimed in any one of claims 1 to 4 or 10.

22. A kit for assay of fructosamine comprising the fructosylamine oxidase as claimed in any one of claims 1 to 4 or 10.

23. A kit for assay of glycated albumin comprising the fructosylamine oxidase as claimed in any one of claims 1 to 4 or 10.

24. An enzyme electrode having the fructosylamine oxidase as claimed in any one of claims 1 to 4 or 10 immobilized thereon.

25. An enzyme sensor comprising the enzyme electrode as claimed in claim 24 as a working electrode.